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An Essay

on

Laryngo Tracheitis

for the

Degree of Doctor of Medicine in the

University of Pennsylvania

By William S. Reid

of Henry County State of Tennessee

Philadelphia January 1. 1836

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Laryngo-Tracheitis,- Croup

This disease requires the careful consideration of every practitioner of medicine; its rapid progress and fatal tendency render it a subject of no ordinary interest to mankind. Infancy & childhood are the periods of life, to which the disease is almost exclusively confined, instances, however, of its attacking adult age are upon record- this is a rare circumstance. The history of croup is veiled in some obscurity. Whether it is a disease of modern date, or has existed from remote ages, is a point upon which authors disagree. Dr Copeland affirms that evidence of its existence is to be met with in the writings of Hippocrates; Dr Cheyne accounts for there being no precise description of this disease prior to the middle of last century, by charging ancient physicians- on the authority of Harris- with great inattention to the diseases of children; so great was this neglect he informs us, that the most eminent of them went, when called to their assistance with

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great reluctance believing their diseases incurable?
To what degree, if any, the physicians of older times
are deserving of this charge my knowledge of their
writings will not enable me to say; but it is, I
believe, agreed upon by all writers, that no
precise account of this disease is to be met with
prior to Home's essay which was published in
1765. Since this period Croup has engaged the atten-
-tion of some of the first talents in the profession, &
it is to be regretted that the views of these eminent
writers, regarding the true nature of the disease
should so widely differ. Upon this subject, however,
like most others in Medicine, unanimity of senti-
ment will be sought for in vain; scarcely any
two whom I have been able to consult agree
in any particular; were this discrepancy confined
to the minutiae, it would have been well, but the
difference of views as to the very essence of the
disease among some is fully as wide. At one
time & by one party the disease was considered as
purely a spasmodic affection; by another infla

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-mmation was alone concerned, & a third has attem
pted a compromise by supposing both inflammation
& spasm have their appropriate cases. Before path
-ological investigation was well understood and
practised it was impossible to say with certainty
which party was correct in their views, as the symp
-toms could in some degree be explained by
either, tho' it would seem the comparative success
in the treatment, by those who held the opinion that
the disease was purely an inflammatory affection
ought to have decided the point. The proportion
of deaths formerly, are said to have greatly exceeded
that of the present day. I know not what to attribute
this difference of success, if it is not owing to the
active antiphlogistic treatment pursued at the
present time. My views of Croup are derived entire
-ly from books, & from these I am induced to
adopt the opinion that it is in nearly every instance,
if not always, an inflammation of the mucus
membrane of the larynx & trachea; that it is never
of a spasmodic nature I am not prepared to assert,

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tho' this is the opinion of two writers, Drs Cheyne & Dewees, whose experience in this disease is, probably, as extensive as any who have ever written upon it. I find, however, that Dr Chapman in his Therapeutics - never having heard him lecture upon it - supports the view that it may sometimes depend primarily upon spasm of the muscles of the larynx - inflammation sometimes occuring as a consequence, precisely in the same way that inflammation of the intestines is produced by colic. His reasons in support of this view are - that the attack is sometimes too sudden to be caused by inflammation, that time is required to produce that change in the capillaries, upon which inflammation depends & where it occurs thus suddenly, without any warning & terminating life in a few hours, the cause of death will have to be refered to a different source than inflammation. He further appeals to the morbid appearances of those cases occuring thus suddenly in support of this view; in many of which no evidence of inflammation is to be seen; should, however, the disease

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have continued long enough to produce inflammation, the same has happened in Colic & is therefore no reason why it should have been inflammatory ab initio. The views of the distinguished professor whose argument I have just given are to me exceedingly plausible, but that the case to which they are applicable is of very rare occurrence I am strongly disposed to believe. The diagnosis in these two varieties will be assisted by an enquiry into the manner in which the disease attacked, whether it was preceded by catarrhal symptoms, or came on suddenly: added to this the pulse & temperature, which in the inflammatory variety are above the natural standard, this is not the case in the spasmodic form — The latter is said to be attended with complete intermissions. With the exception of blood-letting the remedies adapted to the inflammatory variety would be applicable to the spasmodic form, & my remarks upon the disease in the following lines will be intended solely for the inflammatory variety.

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Inflammatory Croup has by most writers been divi-
-ded into Acute & Chronic; The only difference so
far as I can learn is in the activity & severity of the
former; The indications in the treatment are the same,
but the remedies for the acute should be more active
& energetic. In treating of Croup I shall divide
it into two stages, as better calculated to mark
~~the~~ its progress & the remedies adapted to each. The
first will describe the disease before effusion
has taken place; the second after effusion
has taken place.

First Stage

Symptoms.— Before the disease is fully developed,
it is generally preceded by certain premonitory
symptoms which to one much accustomed to it,
will readily be recognized as those of Croup.
These symptoms mostly resemble common catarrh, differing
from it chiefly in the sound of the cough— that of
Croup resembling wind issued from a metallic
instrument— tinkling; in other respects the
premonitory signs of an attack differ but little

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from those of incipient catarrh. These symptoms by most writers have been described as true catarrh, but Dr Bennet denies their identity; his chief diagnosis is in the cough. These symptoms may continue for several days before the disease is fully developed, or they may be followed in a very short time by an alarming attack; in every case Dr Bennet affirms fever is strongly marked. When the disease is fully formed all difficulty as to its nature vanishes, the voice at first is altered – every attempt at speaking is characterized by a hoarse sound; the breathing becomes difficult, particularly inspiration, which has been compared to a person forced upon pumping & hissing. The cough is dry & clangous, very seldom attended with any expectoration, sometimes however, a white viscid substance is expectorated; the face is flushed; eyes watery & injected; much general distress, extreme restlessness. The difficulty of breathing is sometimes so great in this stage as to prove the cause of death –

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instances of which are upon record, but this is of very rare occurrence, for unless the disease is speedily arrested effusion takes place & we then have the Second Stage.

After effusion has taken place there is a moment-ary relief, but soon the case becomes much aggravated, the countenance becomes altered, it is no longer flushed but is succeeded by paleness, or a livid hue, breathing is much more difficult & laborious. The child is said to be very restless frequently changing its position in order to breathe with more ease. Its head is thrown back & mouth opened to facil-itate the ingress of air". The cough is more freq-uent attended with an expectoration of "thin frothy mucus" at first, which affords little relief from the continued effusion. The matter expec-torated varies in consistence; sometimes it is of a muco-purulent nature, at other times it is of a firmer consistence. From the almost constant effort to remove the obstruction in respiration by coughing the chest becomes much exhausted, the voice is

quick & small; the body bathed in a clammy perspi-
-ration, extremities cold; the voice low, scarcely
above a whisper towards the close of the disease it
is rare to see the darkness in the 1st stage.
The disease having thus passed through various stages,
it sometimes remains stationary for any length of
time, the child lingering on the 4th or 5th day from
the commencement. Such is the course of the dis-
-ease, but it sometimes happens that it proceeds
unmolested out to death. The attack is not
always similar, sometimes it assails in the most
violent manner terminating life in a few hours.
Alexander mentions instances of its terminating
life in twenty four hours from the period of its
attack; it may on the other hand linger a much
longer time & assume a chronic character. This
difference will probably depend upon the constitu-
-tion of the patient & the measures resorted to for
arresting its progress. Causes. Of all the
causes which predispose to croup, that of early
life would seem to exert the greatest influence.

No plausible explanation, so far as I am acquainted has been given to this circumstance, & may I not add that the probability is it will remain unexplained. The mere size of the larynx & trachea at this period of life cannot exert any agency in the production of the disease, but will doubtless when once established add much to its severity & danger. There may however be some thing in the nature of the lining membrane of the larynx & trachea at this age upon which the aptitude to the disease depends, independent of its delicate vascular nature; unless this be true — a peculiar organic organization of the membrane which will that renders one child more liable than another. And there exists a predisposition in some children to croup from birth, independent of age cannot be doubted from the testimony to this point. After having suffered one attack a predisposition to a second is established, & it is very seldom that a child is permitted to escape with one attack only. Croup prevails to a greater extent in the spring & fall, than in the other varied seasons of the year. Under

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changes from heat to cold combined with moisture are the most frequent exciting cause of the disease. Small Pox, Measles & Scarlatina - more particularly the latter are sometimes the cause of Croup; after having disappeared the mucus membranes generally are left in a state of irritation - a slight exposure may produce the disease; also a sudden recession of the eruptions are not unfrequently followed by an alarming attack - Croup - and I have instances showing the relation which exists between the skin & mucus membranes. The period of childhood to which the disease is mostly attached is between one & five years of age; within this period there are more instances to occurrence than in the anterior & subsequent periods of life - it is a rare circumstance as I have previously mentioned for Croup to occur after puberty. Florid & robust children are said to be more liable to the disease than others. There can be no doubt likewise, that the habit of dressing children, leaving their necks bare, is often a frequent source of the disease.

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On opening the trachea the cause of death is made manifest: an effusion varying in consistence is seen in different portions of the respiratory tube; sometimes it is a thin frothy mucus, or of a muco purulent nature in the upper part of the trachea & larynx; or it may present the appearance of a membrane more or less perfect, lining the trachea, larynx & extending into the bronchial ramifications. Dr Cheyne says if a child dies four or five days after an attack, we will sometimes find the air cells & bronchial tubes filled with a white fluid like matter; The lungs will not collapse on pressure owing to the interstitial effusion — in this case the inflammation has extended into the bronchiae, complicating Laryngo Tracheitis, with Bronchitis. I have said on a mortual inspection the cause of death was manifest, I allude here to inflammatory Croup, previously I have said no such appearances were to be met with in Spasmodic Croup — which is a very rare disease. In every case of death from croup, a post mortem examination of

the blood was the mediate cause – this I believe is the opinion of all Authors.

Treatment in the first Stage.

Should the physician be called in during the forming stage, before the disease is developed it may in nearly every instance be arrested. For this purpose Dr Dewees advises the external application of Ptis. Tartar: to the throat, at the same time nauseating doses of Vine syrup. It very seldom progresses any farther. The Dr informs us when taken thus early. It rarely happens however, that the practitioner is called until the disease is fully formed – it then too often baffles the most active remedies. The practice in this case will be governed by the symptoms; it is not necessary in every case to resort to V.S. tho this remedy where the pulse is quick & tense, temperature of the surface more above the natural standard – the respiration difficult & hard – with pain in the patient he is diseased with. Where Symptoms such as I have just stated exist, the practice ought to be more active & energetic. For the diseases march with more rapid strides to the crisis. The Crisis

when once fully developed. Among the remedies deserving 14
of confidence V.S. claims first our attention. Sufficient
blood is to be drawn at the first bleeding to make
an "instantaneous impression upon the disease & upon
the system, by diminishing the quantity of blood, alter-
-ing the determination & unloading the lungs".
In young children it may sometimes be difficult
to bleed from the arm, in urgent cases it has been
advised in this dilemma to open the jugular vein.
In determining upon the propriety of repeating V.S.
we shd be governed by the same symptoms as in the
first instance - pulse, temperature & breathing.
Other remedies however ought to be tried before
resorting to a second bleeding. After general bleed-
-ing leeches are recommended to combat [illegible] means a [illegible]
[illegible] a question of doubt whether here [illegible] is
a valuable auxiliary; they are directed to be placed along
the Sternum & alongside the trachea. There is some discrepan-
-cy of opinion respecting the application of leeches. Dr Evans &
others deny their utility; they on the contrary affirm
that an aggravation of the symptoms follow their applica-

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-cations; Drs Cheyne, Alexander & McIntosh advise them very confidently, after the force of the circulation has been diminished by general bleeding. I cannot pretend to reconcile such discordant views; They are said to prove useful here, as in other inflammations - inclosing the capillaries. Immediately after general bleeding an emetic of tartarized Antimony shd be given - 1 gr. to ℥i of water, a teaspoonful of which administered every 10 or 15 minutes will generally effect this purpose. Besides controlling the action of the heart & arteries, equalizing the circulation, an emetic exerts a specific action upon the capillary system of vessels - restoring their natural secretions. At the same time turpentine shd be applied to the throat in preference to blisters, its action is much more prompt & powerful - before a blister could have any effect the disease may have progressed so rapidly as to occasion irreparable mischief; in cases of slow progress a blister is preferable, as the impression it produces is more durable. Where the stomach is insensible to an emetic, the warm bath conjoined with the preceding remedies is recommended by Dr Cornman in his pamphlet. The treatment I have described is timely

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administered will in some cases arrest its further progress; in other instances, though crippled it has not entirely relinquished its hold: here Calomel in the dose of 2, 3 or 5 grs every hour or two, combined with tartar emetic in nauseating doses, with a blister to the throat will generally remove every vestige of the disease. Calomel is said to prove beneficial by its revulsive action & likewise evacuating the bowels. From its known action on the glandular system may it not also alter the diseased action as to induce it? Should however, the disease continue its onward march unchecked by these remedies & effusion take place some alteration of treatment is demanded, the details of which I shall now proceed to give. Treatment of the Second Stage.

The efforts to resolve the inflammation having proved unavailing & effusion has taken place, especially if it is of the consistence of coagulable lymph lining the larynx trachea & bronchial tubes, a case we are told by an eminent writer is to be considered rather as an escape than a thing to be wished for. It is from a view of the pulse which is weak

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and so it, the skin is bathed in a clammy perspiration.
Dr Coxe says he has never seen any advantage to accrue from V.S. at this period. Dr Dewees is of the same opinion. It wd seem to exhaust the already sinking powers of the constitution to abstract blood after effusion, yet Dr Alex. under advices it shd be done.
Emetics, are almost our sole reliance at this period to expel the deciduous membrane & remove the muco-purulent matter choking up the different portions of the respiratory tube. The stomach in some cases is very insensible to the impression of an emetic, owing to the congestion of the brain — so much so, that Dr Coxe states he knew a child to take 20 or 8 grs of Tartar Emetic without producing vomiting.
For the purpose of detaching the deciduous membrane Senega is prefered by Drs Dewees & Eberle; the former says it creates a greater shock to the system & racked. His formula for using it is to take half ounce of powdered Senega boiling water half pint, let it simmer until nearly half the fluid is drawn — carefully & given to a child of twelve years

old a teaspoonful every 15 or 20 minutes until it puks; to a child older he gives two teaspoonful at a dose. Calomel shd also be given in the dose of 3 to 5 grs every hour or two, with a view to its revulsive action, besides its tendency to alter the deranged secretions. Instead of the warm bath hot flannels to the surface, with frictions might probably answer a better purpose; a blister shd be kept to the throat, which from the impression it produces has a tendency to withdraw irritation from the inflamed parts to the surface. Cases after the formation of the deciduous membrane have been accomplished, but they are so rare, as scarcely to form an exception to the rule - that when the effusion lines the larynx, trachea & bronchia in the form of a membrane, death may with certainty be expected. Other remedies have been advised, but from the experience of the best Authors, I think, I am justified in saying, when the above remedies fail, all human efforts will fail.

Will. S. Reid.